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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/718,809

11/24/2003

Jin Young Kim

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3473

30593 7590 09/20/2007  
HARNESS, DICKEY & PIERCE, P.L.C.  
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EXAMINER

CHACKO DAVIS, DABORAH

ART UNIT

PAPER NUMBER

1756

MAIL DATE

DELIVERY MODE

09/20/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/718,809	<b>Applicant(s)</b> KIM ET AL.	
	<b>Examiner</b> Daborah Chacko-Davis	<b>Art Unit</b> 1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07/09/2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2, and 11, are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent No. 2001-221908 (Furuya) in view of U. S. Patent No. 6,184,403 (Welch et al., hereinafter referred to as Welch).

Furuya, in the abstract, discloses an organic metallic composition comprising the claimed metal complexes, wherein the metallic complexes includes Ag, and Au and one of Cu or Ti or Ta, and that the metals in the metallic complex is further complexed with organic compounds.

The difference between the claims and Furuya is that Furuya does not disclose that the metal complexed organic compound i.e., the organometallic compound has the claimed neutral ligand with photosensitivity. Furuya does not disclose that the organic-metal complex includes the anion recited in claims 1, and 11. Furuya does not disclose that the organic film complexed with the metal includes the neutral ligand recited in claim 2.

Welch, in the abstract, and in col 2, lines 15-67, and in col 3, lines 21-55, in col 4, lines 27-67, discloses that the organo metallic compounds includes a neutral metallic

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ligand such as  $\text{NR}^9$ , wherein  $\text{R}^9$  comprises an alkyl group, and a nitro or carboxylate anion, and discloses a neutral ligand that has the claimed no. of carbon atoms, and a donor such as nitrogen or sulfur and is therefore inherently sensitive to light exposure (i.e., photosensitive). Welch, in col 8, lines 22-24, discloses that the composition is can be patterned (via decomposition or conversion to metal oxide) via exposure to a laser at suitable wavelengths i.e., the composition is photosensitive.

Therefore, it would be obvious to a skilled artisan to modify Furuya by employing the organic ligands and anions suggested by Welch in the organo-metal complex because Welch, in col 1, lines 66-67, and in col 2, lines 1-4, discloses that the addition of the claimed ligands in the metal complex induces higher volatility in the organo metallic compound, and enables stability of the organo metal complex at the sublimation point, and retains desirable processing features.

### ***Response to Arguments***

3. Applicant's arguments filed July 8, 2007, have been fully considered but they are not persuasive. The 103 rejection of claims 1-2, and 11, made in the previous office action (paper no. 20070303) is maintained.

A) Applicants argue that Furuya does not disclose organometallic compounds and that the starting materials are different from that claimed in claims 1, and 11.

Furuya discloses the claimed organometallic compounds, and provides an alloy of Ag with Au and Pd with a total wt. % of about 3.0 wt. %, and further includes at least Cu at a wt. % of about 3.0 wt.%. Furuya complexes the metallic complexes with the

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organic base composition 8, on the substrate to form the organometallic composition layer on the substrate. Welch is depended upon to disclose the claimed ligands and anions present in the organometallic composition.

B) Applicants argue that Welch does not disclose that the volatility of the ligands of claims 1, and 11 is due to photosensitivity and that neither Furuya nor Welch disclose a neutral metallic ligand having photosensitivity.

Furuya is not depended upon to disclose the claimed ligand with photosensitivity. Welch, in col 2, lines 1-67, in col 3, lines 15-67, in col 4, lines 27-67, discloses organometallic compositions that has a neutral ligand Y, and Z that has the formula  $NR_9$  wherein  $R_9$  is an alkyl (at least one carbon atom) i.e., the composition discloses the same ligand as claimed and is therefore inherently sensitive to light (photosensitive). Additionally, Welch, in col 8, lines 18-24, discloses that the metal organic complex composition is photoactive or photosensitive (photolytic i.e., can be decomposed) and is effected upon exposure to laser at a suitable wavelength i.e., the composition with the ligands are volatile in the presence of light (at suitable wavelengths).

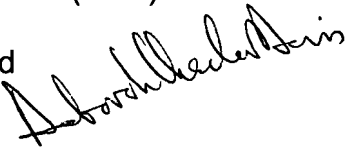
### **Conclusion**

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daborah Chacko-Davis whose telephone number is (571) 272-1380. The examiner can normally be reached on M-F 9:30 - 6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dcd



September 17, 2007.